

PATENT

## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants: JESSE J. WILLIAMS AND ERIC J. HANSEN

For: EXTRACTION CLEANING WITH OXIDIZING AGENT

Serial No.: 09/589,973

Examiner: Derrick G. Hamlin

Filed: 06/08/00

Art Unit: 1744

Docket: 71189-1300

## DECLARATION UNDER 37 C.F.R. § 1.131 OF JESSE J. WILLIAMS

Commissioner for Patents  
Washington, DC 20231

Sir:

Jesse J. Williams hereby declares that:

1. I am a citizen of the United States and a resident of Zeeland, Michigan. I am an inventor named in the above-identified U.S. patent application.

2. Since at least April 1993, I have been employed as Manager of Chemical Development at BISSELL Homecare, Inc., the assignee of the above-identified patent application, and its predecessor in interest, BISSELL Inc. (hereinafter collectively referred to as BISSELL).

3. Prior to September 3, 1997, Eric Hansen and I conceived of the invention of admixing an oxidizing agent with a cleaning solution in an extraction cleaning machine of the type manufactured and sold by BISSELL in the manner disclosed and claimed in the above-identified patent application.

4. Prior to September 3, 1997, the invention set forth in at least claim 1 of the above-identified patent application was actually reduced to practice by adding a TAED/sodium perborate mixture to a cleaning solution (BISSELL Carpet Care) in an extraction cleaning machine identified as a Big Green Cleaning Machine. Before September 3, 1997, standard tests were performed to compare the cleanability of BISSELL Carpet Care cleaning solution with and without TAED/sodium perborate. The report of the standard test showed to my satisfaction that

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the addition of a TAED/sodium perborate mixture to a BISSELL Carpet Care cleaning solution in an extraction cleaning machine significantly improved the cleanability of the BISSELL extraction cleaning machine.

5. Attached hereto as Exhibit A is a BISSELL Product Testing Laboratory report setting forth the testing that was conducted under our supervision and direction. Although the date of the report is before September 3, 1997, these dates have been redacted. The report, Exhibit A, shows that the addition of a mixture of TAED/sodium perborate to a cleaning solution in a process for cleaning carpet wherein the cleaning solution and TAED/sodium perborate is sprayed onto a carpet and then removed by suction enhances the carpet cleaning process compared with the use of the carpet cleaning solution alone.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Dated: 5/24/02

By Jesse J. Williams  
Jesse J. Williams

60068112

MAY-24-2002 16:46

McGarry Bair LLP

616 742 1010 P.11/22

## **EXHIBIT A**



M E M O

BISSELL R &amp; D

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Homecare Division  
P.O. Box 1868  
Grand Rapids, MI 49501-1868, USA  
2345 Walker NW  
Grand Rapids, MI 49504-2345, USA  
Telephone: (616) 453-4451  
Fax: (616) 453-1383

DATE: [REDACTED]

TO: Gary Kasper, Laura Prominski, Diane Simek  
CC: Dave McDowell  
FROM: Eric J. Hansen  
SUBJECT: Results of TAED/Sodium Perborate "All Fabric Bleach" for Deep Cleaning

The European "all fabric bleach" laundry chemistry using TAED (tetra acetyl ethylene diamine) and a persalt (peroxide carrier), in this case sodium perborate, was tried as an additive package to BISSELL Carpet Care. Standard lab cleanability tests were run at 70, 120, and 160 degrees Farenheit.

The summary results are attached. The key findings included the following:

- 1) TAED/Sodium Perborate cleaned better than Carpet Care alone at all three temperatures. The cleaning differences were statistically significant at the 95% or greater confidence level in each case.
- 2) The largest increase in cleaning efficacy was at 70 degrees F. This would indicate oxygenated "all fabric bleaches" might be useful for all BISSELL machines - not just "heated water" machines.
- 3) The obvious effectiveness of this "all fabric bleach" begs the question of whether it could be a BISSELL stand alone chemical product in the form of a "stain stick" or liquid to work with our line of Chemicals and Deep Cleaners.

We should discuss if further testing/development is desired and what direction it should take.

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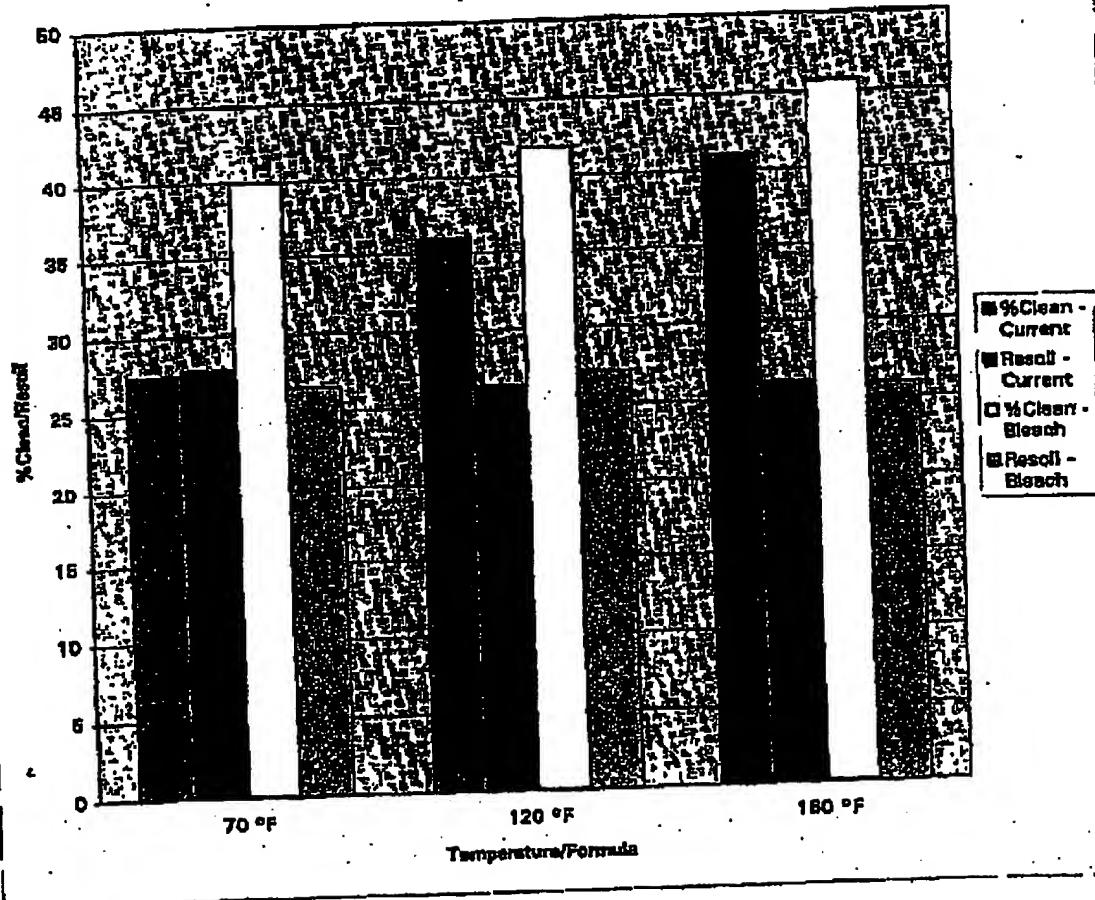
BISSELL, R. &amp; D

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003

Tank Temp	%Clean - Current	Resoil - Current	%Clean - Bleach	Resoil - Bleach
70 °F	27.48	27.86	39.97	26.56
120 °F	35.99	26.36	41.9	27.18
160 °F	41.09	26.11	45.7	26.95

Temp/Formula vs. Cleanability and Resoil



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4437-42.XLS-Clean, Resoil vs temp

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2004

**BISSELL INC. - HOMECARE DIVISION**  
**PRODUCT TESTING LABORATORY REPORT**

**PROJECT #:** 970077

**TO:** Eric Hansen

**FROM:** Barb Reed

**DATE:** [REDACTED]

\* Note - Claims based upon the information and data contained in this report cannot be made unless first reviewed with the Bissell Homecare Engineering Department.

**OBJECTIVE:**

Determine if all-fabric bleaching chemistry increases cleaning of Bissell machine/chemical at various temperatures.

**CONCLUSION:**

The addition of TAED/Sodium Perborate to the cleaning solution enhances the cleaning effect of the current Bissell Carpet Care. This effect is more pronounced at lower temperatures. Resoil properties do not seem to be adversely affected. Additional testing would be required to determine the optimum ratio of TAED/Sodium Perborate to use. There was more foam generated in both the clean water and recovery tanks with the addition of the bleaching chemicals. See data section for complete results.

**EQUIPMENT:**

1. X-rite 948 Spectrocolorimeter with computer and "Colorstar" software
2. Mettler Scale
3. 12" by 27" medium pile white nylon carpet
4. Big Green Clean Machine with regular extract wand
5. Current Bissell Carpet Care (from factory)
6. TAED chemical
7. Sodium Perborate chemical
8. Standard dirt prepared in Bissell Test Lab
9. Ball mill and 100 ceramic balls

**REDACTED**

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2005

PROCEDURE:

Carpets were cleaned with a Big Green Clean Machine and resoiled according to Bissell BDT-101 and BDT-102. Four carpets were cleaned in each set. Water temperature was taken before and after cleaning each set. Temperatures were recorded for clean water in bucket and at the tip of the spray wand. For carpets cleaned with the bleaching chemicals 5 oz of Carpet Care, 20 grams of Sodium Perborate and then 20 grams of TAKD were added to each gallon of water. Carpets were cleaned with 4 wet strokes followed by 2 dry strokes. Foam generated in both the clean water and recovery tanks was noted for each set of carpets.

DATA:

A summary of the cleanability data is shown in the table below. Detailed data sheets are in the raw data section.

Formula	Temperature	% Pickup	% Clean	$\Delta E(vi-r)$	$\Delta E(va-r)$
Current	160°F	95.5	41.09	26.11	4.62
Bleaching	160°F	94.9	45.70	25.95	4.02
Current	120°F	96.2	35.99	26.35	4.19
Bleaching	120°F	95.3	41.90	27.18	3.82
Current	70°F	96.9	27.48	27.86	4.70
Bleaching	70°F	95.7	39.97	26.55	4.20

A lower  $\Delta E$  shows better cleaning. Differences of less than 2 cannot be detected by the untrained eye. The  $\Delta E(vi-r)$  compares the virgin and revacuumed values and the  $\Delta E(va-r)$  compares the vacuumed and revacuumed values.

The attached chart shows a comparison of the temperature vs cleanability and resoil for current Carpet Care and Carpet Care with bleaching chemicals added. Significant statistical differences in cleanability are seen at all temperatures tested with the addition of the bleaching chemicals. This is most notable at room temperature. The resoil properties do not appear to change that drastically with the addition of the bleaching chemicals.

Addition of the bleaching chemicals to the solution resulted in significant foam generation in the clean water tank. This was more pronounced at the higher temperatures. Foam generated in the recovery tank also increased slightly over plain Carpet Care. This was most noticeable at 70°F.

These tests were performed between [REDACTED] and [REDACTED]

REPORTED BY Barb Reed [REDACTED]

**REDACTED**

[REDACTED] BISSELL R &amp; D

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2008

LABORATORY APPROVAL *(Handwritten)* [REDACTED]

LABORATORY DISPOSITION: as tested, addition of oxygenated bleaching agents to BISSELL carpet cleaning solution showed statistical significant differences versus BISSELL carpet cleaning solution without any additives.

ENGINEERING APPROVAL

ENGINEERING DISPOSITION: Initial "all fiber bleach" additive results were positive for enhanced cleaning. The level and ratio of TAEQ/Sodium Bicarbonate require further development if their addition to the formulation is desired.

REVIEWED BY *E. J. Hause* [REDACTED]

REVIEWED BY \_\_\_\_\_

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## TEST LAB WORK REQUEST

TEST USE ONLY	TEST #: <u>970077</u>	PRIORITY:																																																												
REQUEST INFO	TEST CATEGORY: <input type="checkbox"/> EVALUATION <input checked="" type="checkbox"/> DEVELOPMENT <input type="checkbox"/> CLAIM SUBSTANTIATION <input type="checkbox"/> APPROVAL																																																													
DESCRIPTION	REQUEST DATE: _____ REQUESTOR: EJH REQUESTOR'S DEPARTMENT: _____	DESIRED COMPLETION DATE: _____ DEVELOPMENT ENGINEER: EJH DEEP CLEANING/CHEMICALS <input checked="" type="checkbox"/> EPCU <input type="checkbox"/> QUALITY <input type="checkbox"/> VACUUM/SWEEPER MANUFACTURING																																																												
RATIONALE	PROJECT #: DESCRIPTION: #950 Test cleaning effectiveness of TAED/Sodium Pyborate added to Carpet Care solution at various cleaning temperatures. PRODUCT MODEL #: 923 Upright PowerSteamer COMPONENT DESCRIPTION: NA COMPONENT MANUFACTURER / PART #: NA	SAMPLE SIZE: 4 Carpets per variable																																																												
TEST PLAN	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>SEQUENCE NUMBER</th> <th>TEST NUMBER</th> <th>DESCRIPTION</th> <th>QTY TO TEST</th> <th>DATE NEEDED</th> <th>WITNESS TESTING?</th> </tr> </thead> <tbody> <tr> <td></td> <td>BDT101</td> <td>Clean carpet w/ 923 Upright steamer - use Carpet Care at 5oz/gallon</td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td>Clean 4 carpets per variable.</td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td>Clean using 1) 70 degrees F Carpet Care solution</td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td>2) 120 degrees F</td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td>3) 180 degrees F</td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td>4) 70 degrees F Carpet Care solution W/ TAED Bleach</td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td>5) 120 degrees F</td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td>6) 180 degrees F</td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td>Mix TAED / Sodium Pyborate at a 1:1 weight ratio. Mix thoroughly into Carpet Care solution before cleaning carpets. Use 40 Gnome total powder mix per gallon of solution.</td> <td></td> <td></td> <td></td> </tr> </tbody> </table>		SEQUENCE NUMBER	TEST NUMBER	DESCRIPTION	QTY TO TEST	DATE NEEDED	WITNESS TESTING?		BDT101	Clean carpet w/ 923 Upright steamer - use Carpet Care at 5oz/gallon						Clean 4 carpets per variable.						Clean using 1) 70 degrees F Carpet Care solution						2) 120 degrees F						3) 180 degrees F						4) 70 degrees F Carpet Care solution W/ TAED Bleach						5) 120 degrees F						6) 180 degrees F						Mix TAED / Sodium Pyborate at a 1:1 weight ratio. Mix thoroughly into Carpet Care solution before cleaning carpets. Use 40 Gnome total powder mix per gallon of solution.			
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DISPOSAL INSTRUCTIONS	<input checked="" type="checkbox"/> RETURN TO REQUESTOR <input type="checkbox"/> SCRAP <input type="checkbox"/> OTHER _____																																																													
LAB USE ONLY	LAB APPROVAL: <u>DW</u> PROMISED COMPLETION DATE: _____ ACTUAL COMPLETION DATE: _____ LAB TECHNICIAN(S): <u>B. REED</u>																																																													

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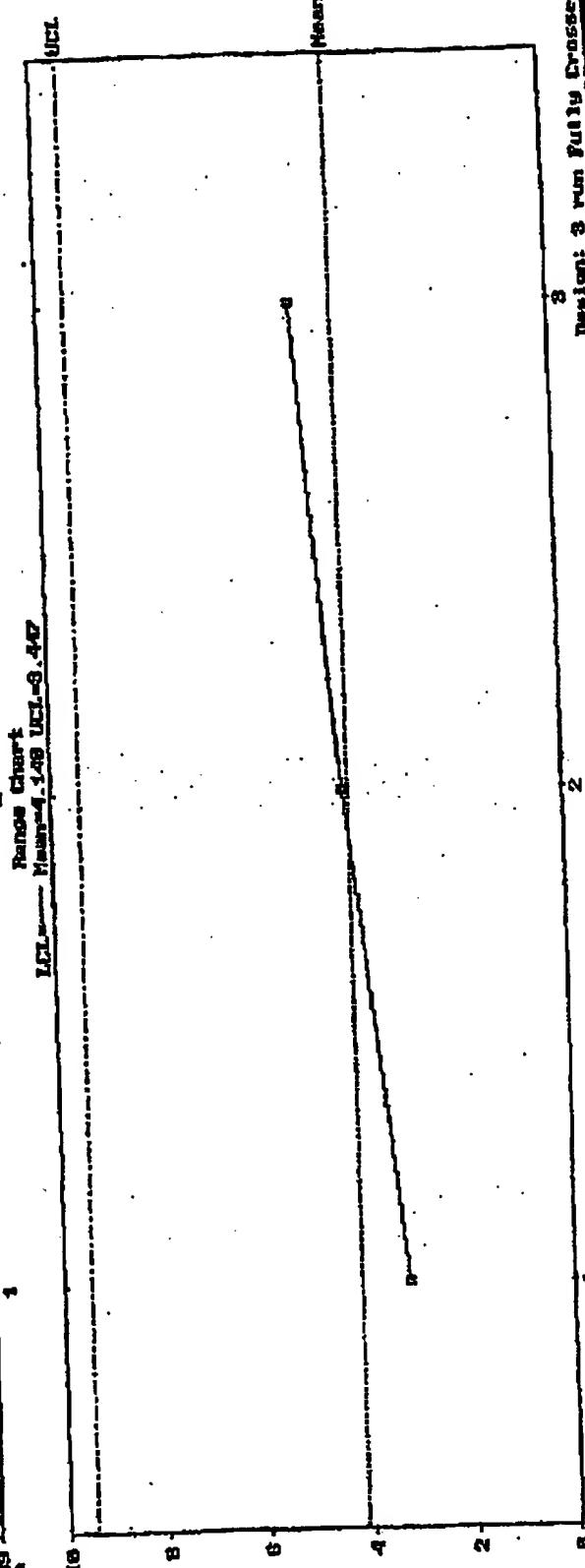
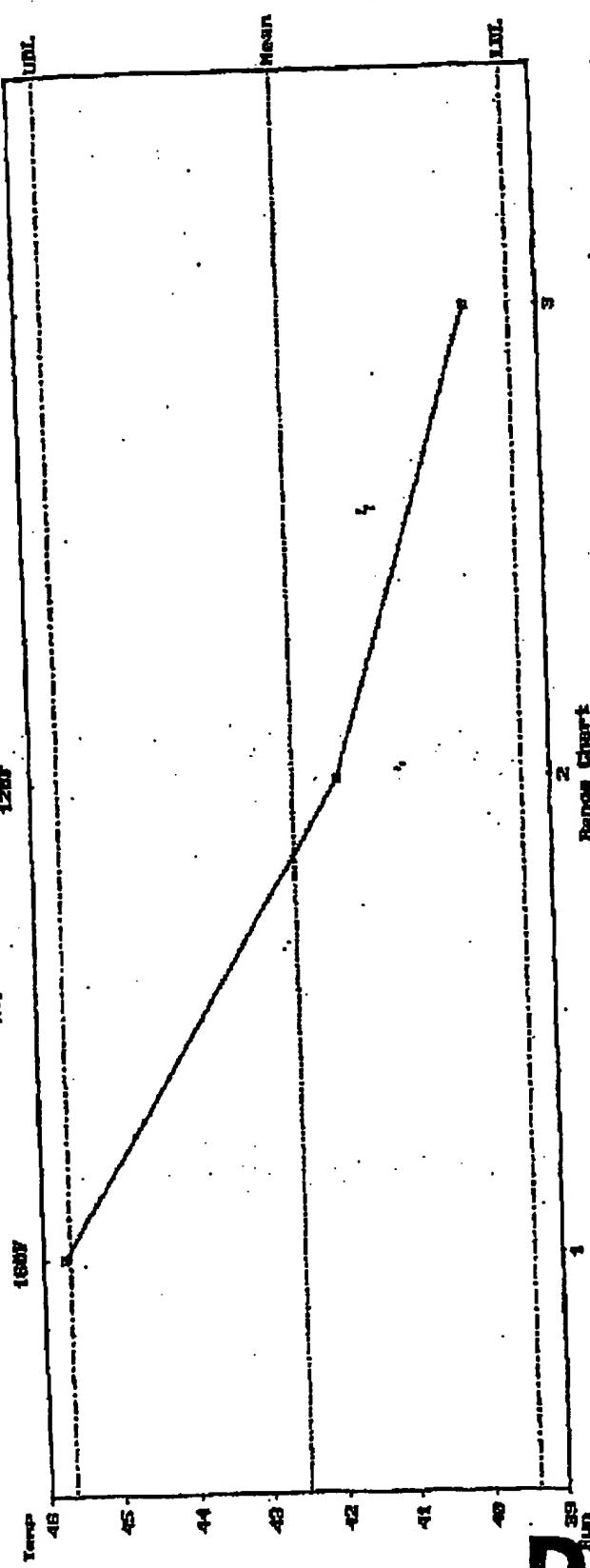
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Drop Run 1000 for X Clean  
 Test: 800X-Bar 2000-978 Red. 2000 with 0.4 dL  
 TBL-488-825 Mean=2.622 UDL-525-548  
 Alpha Level of 0.91 using Furrer Range  
 1200



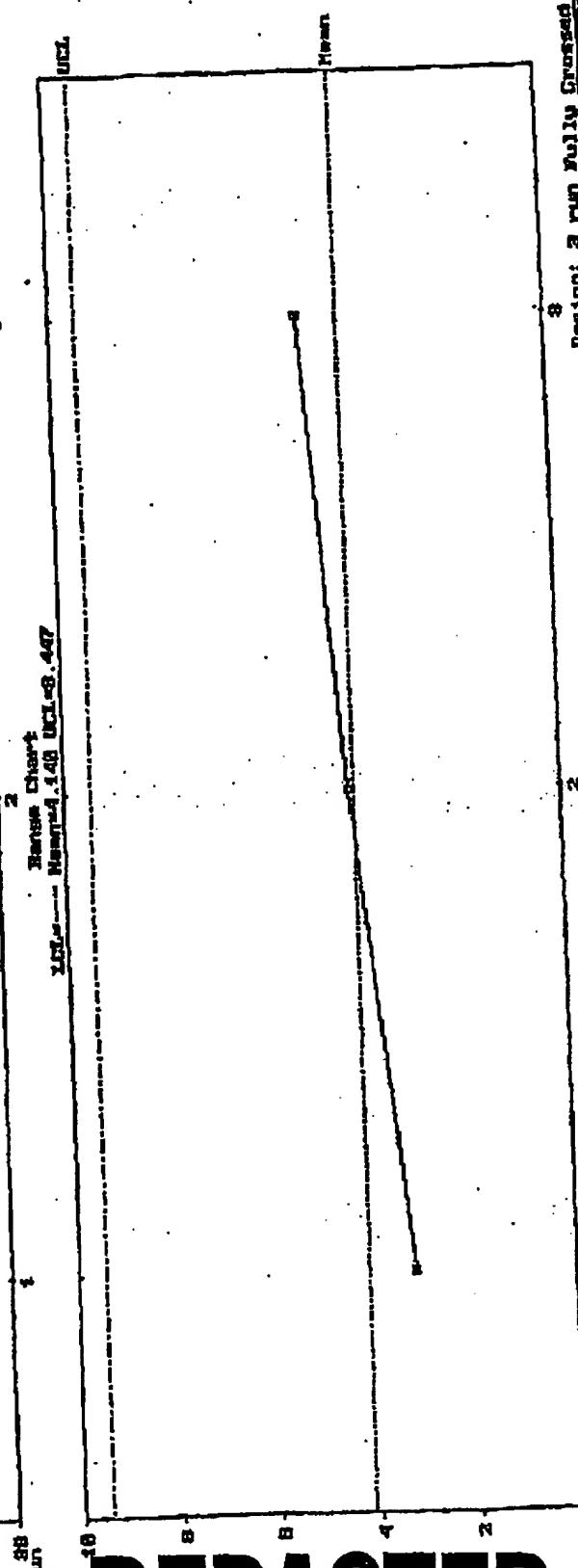
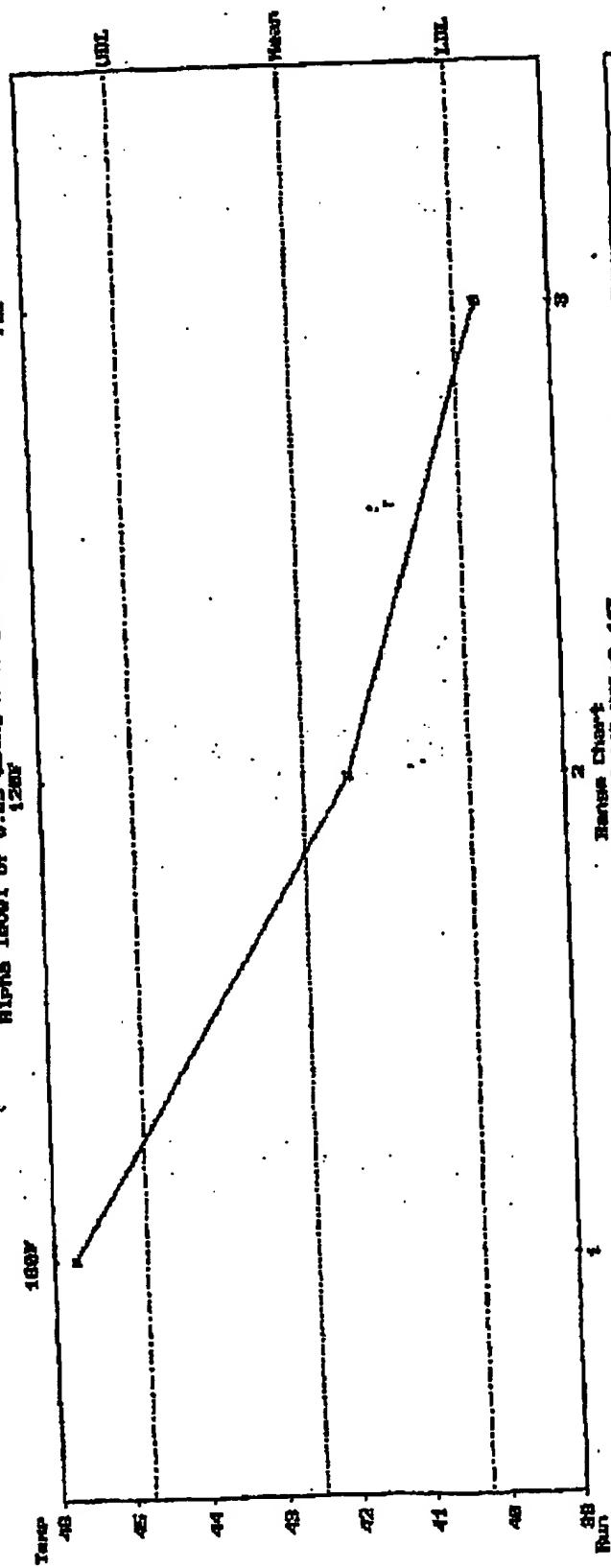
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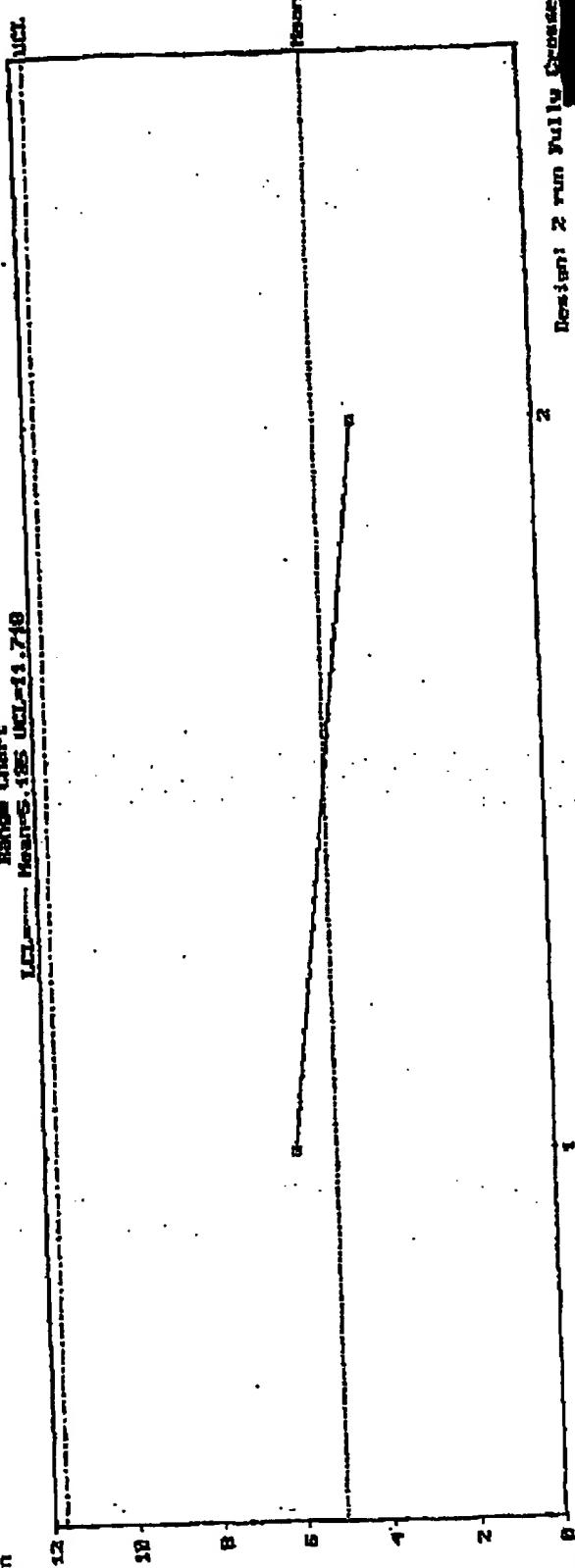
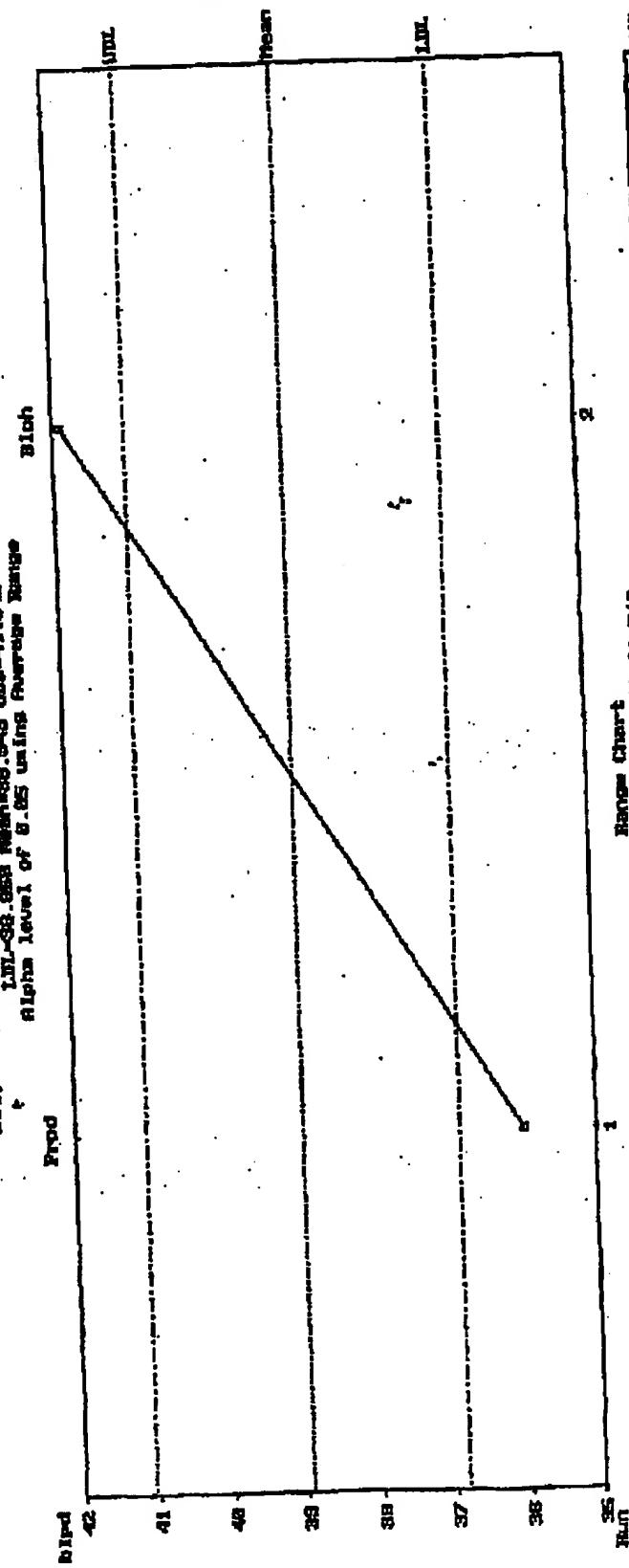
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008

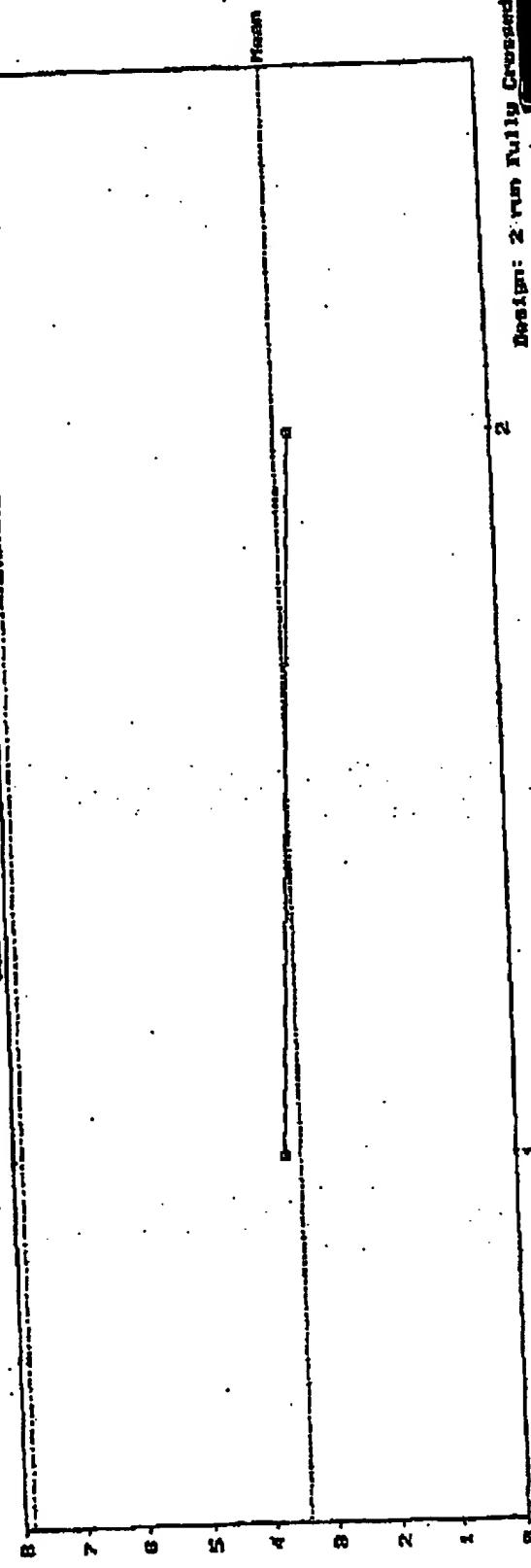
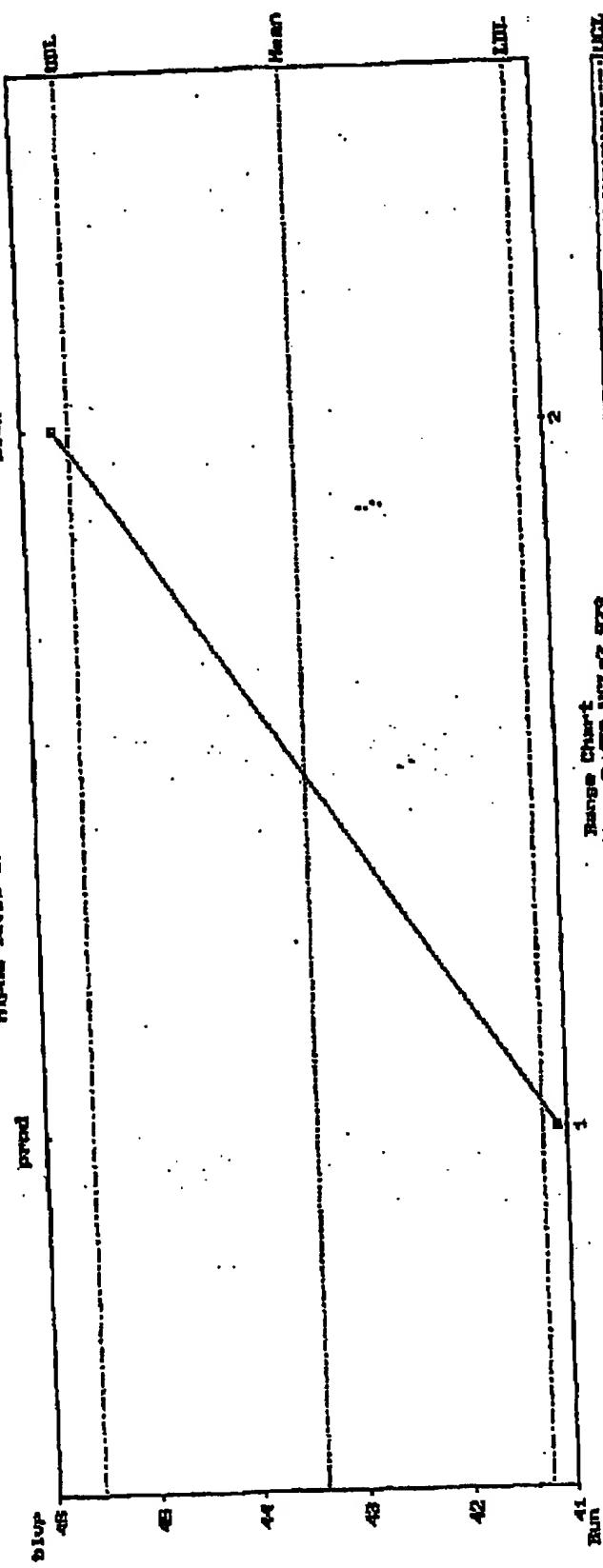
Est. start-Fri 10:07 8-H-2010 for 2 subtractions with 0.4 off  
 Est. end-Fri 10:07 8-H-2010 for 2 subtractions with 0.4 off  
 250 Hertz-2.522 Hertz-2.522 Hertz  
 Aperture limit of 0.05 using Average Range  
 1200





Blanch 1200, Blanch un Prod

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Pranam. Pratidinam 5/11/1969: Balareshwar, Bhandup, Mumbai: 1969.

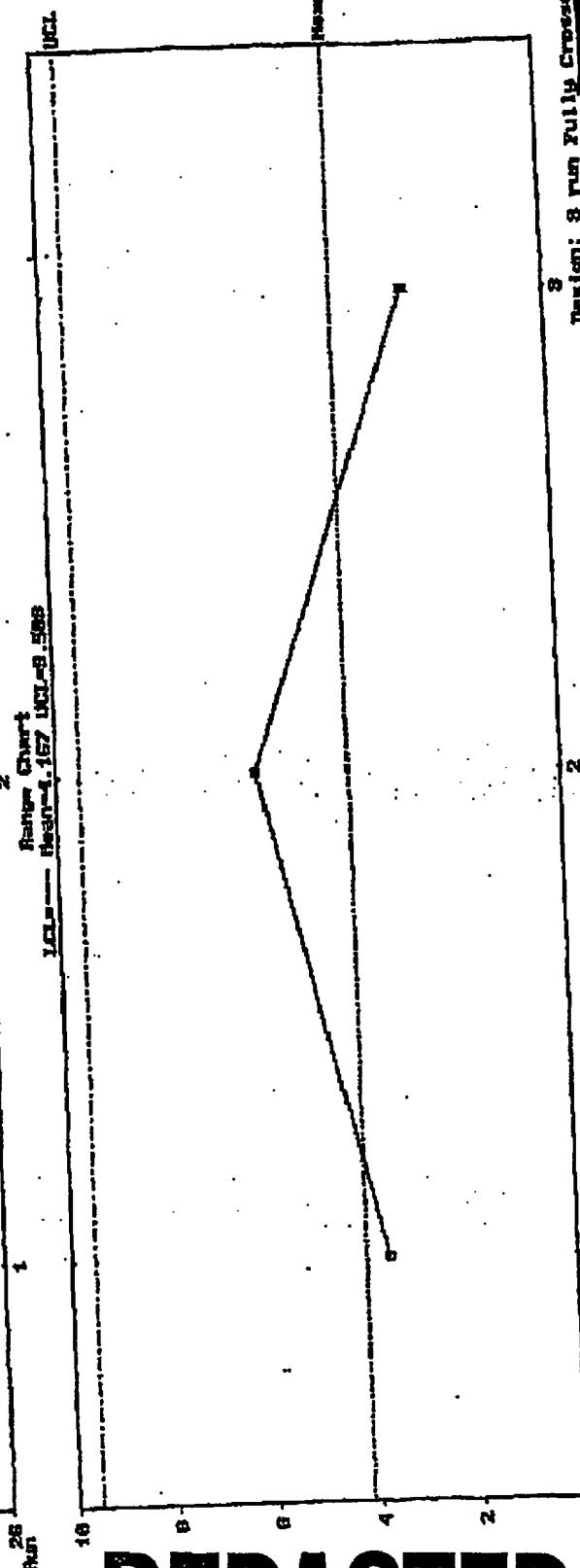
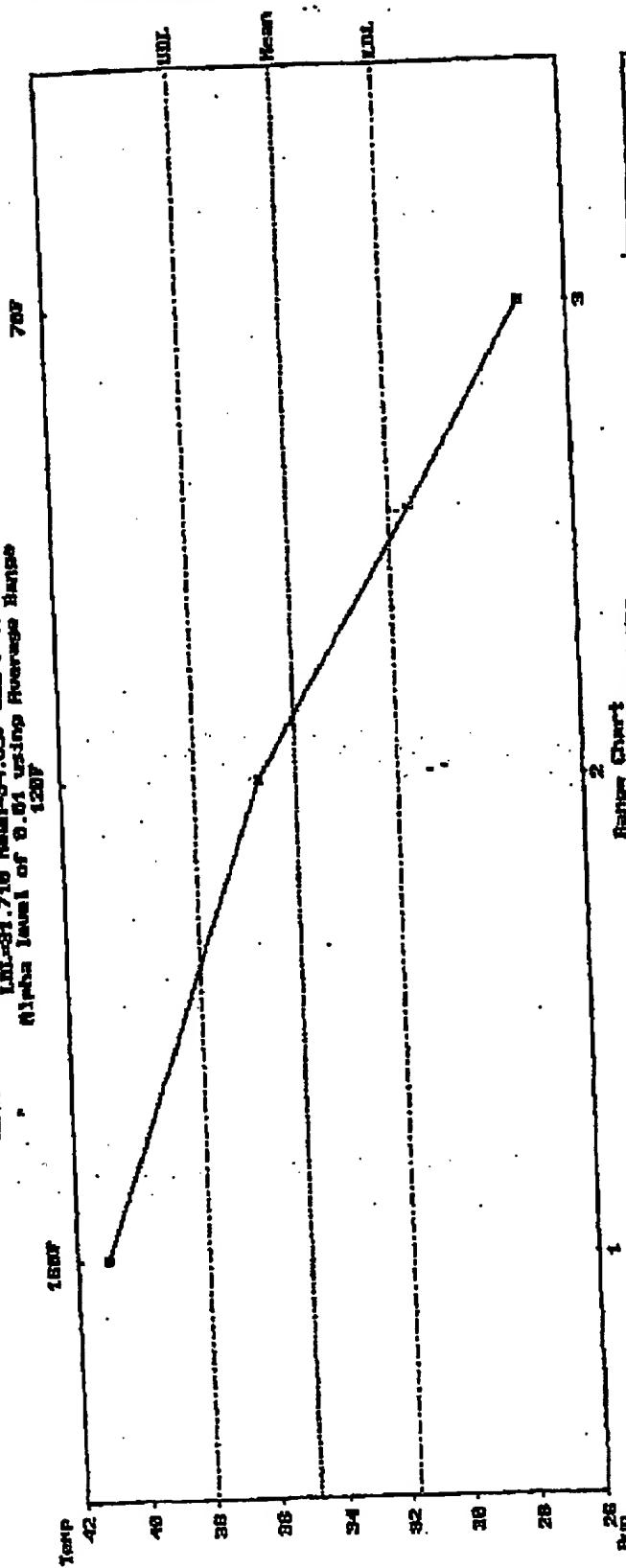
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2012

One Run REACH For 2 Clean  
 One Run REACH For 3 Substrates with 0.4 df  
 Est. 800x-Run 70-800, H-0-2002 For 3 substrates with 0.4 df  
 L00-001-716 Run=0-0.857 Unit=00.000  
 Alpha Level of 0.01 using Reverse Range  
 1200F



Design: 3 run fully crossed

Run file: blipatch14  
 Problem file: Temp effect, Product  
 Study name: Temp effect, Product

REDACTED